going from a common ingress LOBS node to the same egress LOBS node). More specifically, the LOBS control plane sets up label switched OBS paths or LOBS paths for control packets and their corresponding data bursts. In such a LOBS network, both *explicit routing* (ER) and *constraint-based routing* (CBR) can be used to provision and engineer network resources. Modified/extended *interior gateway protocols* (IGP) can be used to disseminate resource/topology information for avoiding contentions for the same wavelength channel among bursts belonging to different LOBS paths. Finally, network availability concerns can be addressed using the emerging MPLS survivability framework (i.e., alternate/backup channels).

DESCRIPTION OF ~~DRAWINGS~~ FIGURES

~~Drawing~~ Figure 1 depicts a Labeled Optical Burst Switching Node.

~~Drawing~~ Figure 2 depicts the Access Point interface between protocol data unit (PDU) devices (e.g., electronic LSR) and LOBS nodes.

DETAILED DESCRIPTION OF THE INVENTION

In the preferred embodiment of the invention, the backbone network will consist of LOBS nodes, including edge (both ingress and egress) LOBS nodes and core LOBS nodes. A LOBS node (showing both edge and core nodes) is shown in ~~Drawing~~ Figure 1. Referring to ~~Drawing~~ Figure 1, the access point (AP) interface (1), burst assembly/disassembly units (2) and LOBS data add/drop functions (3), are needed for edge LOBS nodes only. These are optional for core LOBS nodes. (In ~~Drawing~~ Figure 1, (1), (2) and (3) are collectively grouped as being optional (4) for core LOBS.) FDLs and wavelength conversion capability are optional but preferred at LOBS nodes. LOBS nodes are interconnected

with WDM links, each of which contains one or more control wavelengths (5), and one or more data wavelengths (6).

At the access point, PDU devices (7) will be attached to an edge LOBS node. PDUs from these devices are assembled into "bursts" at an ingress LOBS node, and then delivered, in an optical burst switched mode, to an egress LOBS node without going through an Optical/Electrical/Optical (O/E/O) conversion at intermediate (i.e., core) LOBS nodes. The egress LOBS node then disassembles each burst and forwards PDUs to appropriate PDU devices

Turning to the AP interface between PDU devices and LOBS nodes (8): The traffic coming out of PDU devices are likely to be streams of packets (most probably IP packets) carrying various labels, where each label is associated with a specific class of service, and a specific LSP destined to a specific egress LSR attached to an egress LOBS node.

In the preferred embodiment, the interface unit, see ~~Drawing~~ Figure 2, will contain multiple burst assembly/(BA) and burst disassembly (BD) buffers, (1) and (2) respectively, one for each egress LOBS node. Each BA buffer is, at least logically, divided into multiple queues (3), one for each Class of Service with specific delay, loss probability and other Quality of Service (QoS) parameters. A major function of the interface unit is to map PDUs to a corresponding BA buffer, where the PDUs are to be assembled into bursts that will be sent on one or more LOBS paths. Multiple LSPs may be mapped onto the same LOBS path (i.e., aggregated), provided that these LSPs are all destined to the same egress LOBS node (but possibly different egress PDU devices such as electronic LSRs attached to the egress LOBS node), and the LOBS path provides compatible (or better) services than required by these LSPs.

Although the present invention and its advantages have been described in the foregoing detailed description and illustrated in the accompanying ~~drawings~~ figures, it will be understood by those skilled in the art that the invention is not limited to the embodiment(s) disclosed but is capable of numerous rearrangements, substitutions and modifications without departing from the spirit and scope of the invention as defined by the appended claims.

Some foreseeable such substitutions pertain to the means of processing the Labeled Optical Burst Switching Control Packet wherein one or more of the steps within the means for processing the control packet, (such as reading the control packet, logically processing the information read by performing some algorithm or data lookup or other means as a result of the information read for the purposes of setting up a path (i.e. a bandwidth reservation), and subsequently forwarding of this modified or unmodified control packet); may be done in-part or in-whole by optical, or quantum computing, or other means rather than by electronic means. In general, the same economic benefits are gained in that the expense of implementing such optical or quantum computing or other means, is limited to the few control packet signal channels rather than being required on all of the signal channels as is done in the prior art such as is found in Optical Packet Switching wherein the packet headers on every signal channel are read and process either electronically, optically or by some combination of both.